



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Mark R. Sikkink et al. Examiner: Daniel Ryman

Serial No.: 09/621,315 Group Art Unit: 2616

Filed: July 20, 2000 Docket: 499.081US1

For: AN INTERFACE FOR SYNCHRONOUS DATA TRANSFER BETWEEN
DOMAINS CLOCKED AT DIFFERENT FREQUENCIES

APPEAL BRIEF UNDER 37 CFR § 41.37

Mail Stop Appeal Brief- Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The Appeal Brief is presented in support of the Notice of Appeal to the Board of Patent Appeals and Interferences, filed on July 24, 2006, from the Final Rejection of claims 1, 3-6, 8-10, 14-16, and 18 of the above-identified application, as set forth in the Final Office Action mailed on March 22, 2006.

The Commissioner of Patents and Trademarks is hereby authorized to charge Deposit Account No. 19-0743 in the amount of \$500.00 which represents the requisite fee set forth in 37 C.F.R. § 41.20(b)(2). Appellant respectfully requests consideration and reversal of the Examiner's rejections of pending claims.

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1. REAL PARTY IN INTEREST

The real party in interest of the above-captioned patent application is the assignee,
SILICON GRAPHICS, INC.

2. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant that will have a bearing on the Board's decision in the present appeal.

3. STATUS OF THE CLAIMS

The present application was filed on July 20, 2000, with claims 1-19. A non-final Office action was mailed May 4, 2004. A response filed November 4, 2004 canceled claims 2, 7, 11-13, 17 and 19 and amended claims 1, 3, 5, 6, 10, 14 and 15. A Final Office Action (hereinafter "the Final Office Action") was mailed March 28, 2005. Appellant filed a Notice of Appeal August 29, 2005 and an Appeal Brief February 28, 2006. A non-final Office Action was mailed March 22, 2006 and it is from that Appellant is filing this Appeal. Claims 1, 3-6, 8-10, 14-16 and 18 are rejected and are the basis for this Appeal.

4. STATUS OF AMENDMENTS

No amendments have been made subsequent to the Final Office Action dated March 28, 2005.

5. SUMMARY OF CLAIMED SUBJECT MATTER

In modern microprocessor design, it is possible for the processor to be clocked at a first frequency while the memory is clocked at a frequency that is less than that first frequency. For example, it is possible to clock the processor at 200 MHz, while clocking the memory at 100, 114, 133 or 160 MHz (frequency ratios of 2:1, 7:4, 3:2, 5:4, respectively). What was recognized by Appellant is that, with the proper design, it is possible to provide a single design that provides synchronous data transfer across two or more frequency ratios (p. 9, lines 7-13).

To accomplish this, Appellant illustrates at Figs. 5-7, describes at p. 5, line 9 through p. 8, line 5, and claims in claim 1, and dependent claims 3-5, , an interface for synchronous data transfer from a first domain (e.g., the processor domain) clocked by a first clock at a first frequency to a second domain (e.g., the memory domain) clocked by a second clock at a slower frequency. The interface includes a first latch for receiving data from the first domain when the first latch is selected, a second latch for receiving data from the first domain when the second latch is selected, and a third latch for transferring data from said first latch or said second latch to the second domain when the second domain is clocked by a clock pulse of the second clock. The third latch is selectively toggled to receive data from the first latch or the second latch in response to a negative edge of the clock pulse clocking the second domain.

As noted at p. 3, line 27 through p. 4, line 31, the first and second latches are clocked by the first clock at the first clock frequency. In addition, the first clock clocking the first domain and the second clock clocking the second domain are both derived from a single primary clock and generate clock pulses that repeat in a ratioed, systematic pattern framed by a secondary synch pulse also generated as a function of the same primary clock.

Appellant also illustrates at Figs. 5-7, describes at p. 5, line 9 through p. 8, line 5, and claims in claim 15, and dependent claims 16 and 18, a method for synchronous data transfer from a first domain (e.g., the processor domain) clocked at by a first clock at a first frequency to a second domain (e.g., the memory domain) clocked by a second clock at a slower frequency. The method includes loading a first master latch with data from the first domain in response to a first domain clock pulse, transferring the data loaded in the first master latch to the second domain through a slave latch in response to a second domain clock pulse, toggling the slave latch to switch to receive data from a second master latch in response to a negative edge of the second

domain clock pulse that is not a non-operate clock pulse, loading the second master latch with data from the first domain in response to another first domain clock pulse, transferring the data loaded in the second master latch to the second domain through the slave latch in response to another second domain clock pulse, toggling the slave latch to switch to receive data from the first master latch in response to the negative edge of the clock pulse of the second domain clock that is not a non-operate clock pulse, repeating a cycle of alternately loading the first and second master latches and transferring data to the second domain through the slave latch until a master clear signal is received by the slave and master latches and entering a non-operate state during each repeated cycle for at least one clock pulse of the faster domain clock. The clock pulses of the first domain and the second domain are both derived from a primary clock and repeat in a ratioed, systematic pattern framed by a secondary synch pulse.

Appellant also illustrates at Figs. 8 and 9, describes at p. 8, line 6 through p. 9, line 1, and claims in claim 6, and dependent claims 8 and 9-10 and 14, an interface for synchronous data transfer between a first domain clocked at one frequency (e.g., the memory domain) and a second domain clocked at a faster frequency (e.g., the processor domain). The interface includes a first latch for receiving data from the first domain when the first latch is selected, a second latch for receiving data from the first domain when the second latch is selected, and a third latch selectively toggled to receive data from said first latch or said second latch in response to a negative edge of a clock pulse, other than a hold pulse, clocking the second domain. The third latch transfers data from the first latch or the second latch to the second domain when the second domain is clocked by a next clock pulse that is not a hold clock pulse.

The first clock clocking the first domain and the second clock clocking the second domain are both derived from a single primary clock and generate clock pulses that repeat in a ratioed, systematic pattern framed by a secondary synch pulse also generated as a function of the same primary clock.

Finally, Appellant illustrates at Figs. 8 and 9, describes at p. 8, line 6 through p. 9, line 1, and claims in claim 10, and dependent claim 14, an interface for synchronous data transfer between a first domain clocked at one frequency (e.g., the memory domain) and a second domain clocked at a faster frequency (e.g., the processor domain). The interface includes a first latch for receiving data from the first domain when the first latch is selected, a second latch for receiving

data from the first domain when the second latch is selected, and a third latch selectively toggled to receive data from said first latch or said second latch in response to a negative edge of a clock pulse, other than a hold pulse, clocking the second domain. The third latch transfers data from the first latch or the second latch to the second domain when the second domain is clocked by a next clock pulse that is not a hold clock pulse.

This summary does not provide an exhaustive or exclusive view of the present subject matter, and Appellants refer to the appended claims and its legal equivalents for a complete statement of the invention.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1) Claims 1, 3-6, 8, 9, 15, 16 and 18 were rejected under 35 USC § 103 as being unpatentable over Jacobs (U.S. Patent No. 5,909,563)) in view of Duffy (U.S. Patent No. 6,535,527) in further view of Santahuhta (EP 0989484) and in further view of Khandekar et al. (U.S. Patent No. 6,049,887).

2) Claims 10 and 14 were rejected under 35 USC § 103 as being unpatentable over Jacobs (U.S. Patent No. 5,909,563)) in view of Duffy (U.S. Patent No. 6,535,527) in further view of Santahuhta (EP 0989484).

7. ARGUMENT

Rejections under U.S.C. § 103

1) The Applicable Law

According to *M.P.E.P.* § 2141, which cites *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986), the following tenets of patent law must be adhered to when applying 35 U.S.C. § 103. First, the claimed invention must be considered as a whole. Second, the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination. Third, the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention. Fourth, obviousness is determined using a reasonable expectation of success standard. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. *M.P.E.P.* § 2141 (citing *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966)).

The Examiner has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *M.P.E.P.* § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Appellants' disclosure. *M.P.E.P.* § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). The references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. *M.P.E.P.* § 2142 (citing *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985)). In considering the disclosure of a reference, it is proper to take into account not only specific teachings of the

reference but also the inferences which one skilled in the art would reasonably be expected to draw there from. *M.P.E.P.* § 2144.01 (citing *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968)). However, if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *M.P.E.P.* § 2143.01 (citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)).

In order to take into account the inferences which one skilled in the art would reasonably make, the examiner must ascertain what would have been obvious to one of ordinary skill in the art at the time the invention was made. *M.P.E.P.* § 2141.03 (citing *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 218 USPQ 865 (Fed. Cir. 1983), *cert. denied*, 464 U.S. 1043 (1984)).

The examiner must step backward in time and into the shoes worn by the hypothetical “person of ordinary skill in the art” when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention “as a whole” would have been obvious at that time to that person. Knowledge of Appellants’ disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the “differences,” conduct the search and evaluate the “subject matter as a whole” of the invention. The tendency to resort to “hindsight” based upon Appellants’ disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

M.P.E.P. § 2141.03.

2) Application of §103 to the Rejected Claims

A) The rejection of Claims 1, 3-6, 8, 9, 15, 16 and 18 under 35 USC § 103.

Claims 1, 3-6, 8, 9, 15, 16 and 18 were rejected under 35 USC § 103 as being unpatentable over Jacobs (U.S. Patent No. 5,909,563) in view of Duffy (U.S. Patent No. 6,535,527) in further view of Santahuhta (EP 0989484) and in further view of Khandekar et al. (U.S. Patent No. 6,049,887). Appellant respectfully submits that the Final Office Action has made an improper prima facie showing of obviousness at least because none of the references

teach or suggest the use of a secondary sync pulse to frame the first and second clocks as required in each of claims 1, 3-6, 8, 9, 15, 16 and 18.

Jacobs describes a computer system having an interface for transferring data between two clock domains. Each clock domain has a respective clock (CLKA and CLKB). The two clocks have a fixed relationship (Figs. 1 and 2, col. 1, line 66 through col. 2, line 6; col. 2, lines) in that one clock (CLKB) is generated as a function of the other clock (CLKA). The PLL 101 that generates CLKB from CLKA also generates two synchronizing signals (SYNCA and SYNCB) used in controlling output of data. As noted in Jacobs at col. 2, lines 47-50, one synchronizing signal is generated for each clock domain. For example, SYNCA is generated for the first clock domain and SYNCB for the second clock domain.

Appellant describes, and claims in claim 1, an interface for synchronous data transfer. Like Jacobs, Appellant generates a first clock for clocking a first clock domain and a second clock for generating a second clock domain. As noted at p. 5, line 27 – p. 6, line 7,

The operation of the interface 44 for transferring data from the first domain 46 clocked at one frequency to the second domain 48 clocked at a slower frequency or clock speed is described by referring to the three sets of timing diagrams in Figure 6. Each set of waveforms represents a different ratio of clock frequencies between the first and second domains. Referring initially to the 3:2 ratio waveforms or timing diagrams, the first domain 46 is clocked at 200 Mhz and the second domain 48 is clocked at 133 Mhz. The synch pulse is derived so that it begins and ends coincident with the negative edges of the faster domain clock in this case the 200 Mhz clock. As shown in Figure 6 the secondary clocks 50 and 52 for the first domain 46 (200 Mhz) and the second domain 48 (133 Mhz) are repeated in a systematic pattern with each cycle being framed by the sync pulse (vertical broken lines 66 and 68). An ABsel signal is generated to alternately select either the master latch 54a of flip flop 54 or the master latch 56a of flip flop 56 for loading data from the first domain 46.

As noted above, “the secondary clocks 50 and 52 for the first domain 46 (200 Mhz) and the second domain 48 (133 Mhz) are repeated in a systematic pattern with each cycle being framed by the sync pulse (vertical broken lines 66 and 68).” This is what is described by Appellant and claimed in claim 1.

The Examiner noted that Jacobs also has signals labeled as sync signals. The signals SYNCA and SYNCB as described by Jacobs, however, do not frame the clocks as described and claimed by Appellant. Instead, as noted by Jacobs, they are used to control the output of data. As such, they more closely resemble the ABSel signal described in the segment of the specification quoted above.

None of the remaining references describe framing of clocks from two different domains with a secondary sync pulse as described by Appellant and claimed in claims 1-6, 8, 9, 15, 16 and 18. Reversal of the rejection of claims 1-6, 8, 9, 15, 16 and 18 is respectfully requested.

Furthermore, the Examiner noted in the Office Action dated March 22, 2006 that the combination of Jacobs, Duffy and Santahuhta “does not expressly disclose that the first and second clock are derived from a single primary clock or that the secondary sync pulse is generated by the same primary clock” (p. 5, lines 1-3) but that Khandekar provides such a teaching.

Khandekar, like Appellant, does describe a circuit for synchronizing data transfers between a first and a second device operating at different data rates when the clocks are both derived from a primary clock and repeat in a ratioed, systematic pattern. Khandekar, however, solves the problem of transferring data between the two domains differently than does Appellant. For instance, Khandekar does not use a sync pulse to frame the ratioed, systematic pattern in a circuit which transfers data from a first domain to a second domain clocked by a slower frequency as required by claims 1, 2-5, 15, 16 and 18. Instead, Khandekar uses a Phase B and a Phase C signal to perform the function that the SYNCB signal performs in Jacobs. Therefore none of the remaining references describe framing of clocks from two different domains with a secondary sync pulse as described by Appellant and claimed in claims 1-6, 8, 9, 15, 16 and 18. Reversal of the rejection of claims 1-6, 8, 9, 15, 16 and 18 is respectfully requested.

In addition, there is no teaching or suggestion in Khandekar or in any of the other cited references to apply the approach described by Khandekar to the circuit described by Huon. Even if one did, the combined circuit would not look like the circuit shown in Figs. 5-8, described by Appellant and claimed in claims 1, 3-6, 8-10 and 14-16 and 18.

Appellant describes, and claims in claims 3, 4, 6, 8-10 and 14, the use of a hold signal (NOP pulse) in conjunction with the secondary synch pulse. Appellant also describes, and claims in claims 15, 16 and 18, the use of the no-op state in synchronous data transfer.

The Examiner stated that the combination of references suggests that at least one clock pulse of the first clock domain is a non-operate (NOP) clock pulse in each repeated systematic pattern. For support the Examiner turns to Santahuhta: col. 6, lines 14-46.

Santahuhta describes an interface for synchronizing a data stream synchronized with a first clock signal with a second clock signal. The method stores data in an alternating fashion between two sets of latches. A data valid signal associated with each latch is used to tell the downstream process the latch holding valid data. The section pointed to by the Examiner simply states that, at times, neither latch will contain valid data and so, therefore, neither data valid register will be set.

As noted by Appellant, when one of the clocks is faster than the other a NOP clock pulse is generated in a systematic fashion so that data is not written in before the previous data was read by the process in the slower clock domain. There is no such mechanism in Santahuhta, or in any of the other references. That is what is described by Appellant and claimed in claims 6, 8-10 and 14. A method of synchronous data transfer which relies on entering a non-operate state during each repeated cycle is also described by Appellant and claimed in claims 15, 16 and 18.

Finally, there is no teaching in any of the cited references “wherein the NOP clock pulse is selected to minimize latency and prevent the slower clocked domain from being overrun by the faster clocked domain” as described by Appellant and claimed in claims 4 and 18. The Examiner once again refers to the same section of Santahuhta, but there is no mention there of minimizing latency while preventing the slower clocked domain from being overrun by the faster clocked domain.

None of the cited references describe the use of a hold signal (NOP pulse) in conjunction with the secondary synch pulse as described by Appellant and claimed in claims 3, 4, 6, 8-10 and 14 or the use of the no-op state as described by Appellant and claimed in claims 15, 16 and 18. Reversal of the rejection of claims 3, 4, 6, 8-10, 14-16 and 18 is respectfully requested.

B) The rejection of Claims 10 and 14 under 35 USC § 103.

Claims 10 and 14 were rejected under 35 USC § 103 as being unpatentable over Jacobs (U.S. Patent No. 5,909,563)) in view of Duffy (U.S. Patent No. 6,535,527) in further view of Santahuhta (EP 0989484).

Appellant describes, and claims in claims 10 and 14, the use of a hold signal (NOP pulse) in conjunction with the secondary synch pulse.

As noted above, the Examiner stated that the combination of references suggests that at least one clock pulse of the first clock domain is a non-operate (NOP) clock pulse in each repeated systematic pattern. For support the Examiner turns to Santahuhta: col. 6, lines 14-46.

Santahuhta describes an interface for synchronizing a data stream synchronized with a first clock signal with a second clock signal. The method stores data in an alternating fashion between two sets of latches. A data valid signal associated with each latch is used to tell the downstream process the latch holding valid data. The section pointed to by the Examiner simply states that, at times, neither latch will contain valid data and so, therefore, neither data valid register will be set.

As noted by Appellant, when one of the clocks is faster than the other a NOP clock pulse is generated in a systematic fashion so that data is not written in before the previous data was read by the process in the slower clock domain. There is no such mechanism in Santahuhta, or in any of the other references. That is what is described by Appellant and claimed in claims 10 and 14.

None of the cited references describe the use of a hold signal (NOP pulse) in conjunction with the secondary synch pulse as described by Appellant and claimed in claims 10 and 14. Reversal of the rejection of claims 10 and 14 is respectfully requested.

8. SUMMARY

For the reasons argued above, claims 1, 3-6, 8-10, 14-16, and 18 were wrongly rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs (U.S. Patent No. 5,909,563) in view of Duffy (U.S. Patent No. 6,535,527) in further view of Santahuhta (EP 0989484) and in further view of Khandekar et al. (U.S. Patent No. 6,049,887).

Furthermore, claims 10 and 14 were wrongly rejected under 35 USC § 103 as being unpatentable over Jacobs (U.S. Patent No. 5,909,563) in view of Duffy (U.S. Patent No. 6,535,527) in further view of Santahuhta (EP 0989484).

It is respectfully submitted that the art cited does not render the claims obvious and that the claims are patentable over the cited art. Reversal of the rejection and allowance of the pending claims are respectfully requested.

Respectfully submitted,

MARK R. SIKKINK et al.

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938
Minneapolis, MN 55402

Date November 27, 2006 By Thomas F. Brennan
Thomas F. Brennan
Reg. No. 35,075

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Appeal Brief, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 27 day of November 2006.

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CLAIMS APPENDIX

1. (Rejected) An interface for synchronous data transfer from a first domain clocked at by a first clock at a first frequency to a second domain clocked by a second clock at a slower frequency, comprising:

a first latch for receiving data from the first domain when the first latch is selected;

a second latch for receiving data from the first domain when the second latch is selected;

and

a third latch for transferring data from said first latch or said second latch to the second domain when the second domain is clocked by a clock pulse of the second clock, said third latch being selectively toggled to receive data from said first latch or said second latch in response to a negative edge of the clock pulse clocking the second domain;

wherein the first and second latches are clocked by the first clock at the first clock frequency; and

wherein the first clock clocking the first domain and the second clock clocking the second domain are both derived from a single primary clock and generate clock pulses that repeat in a ratioed, systematic pattern framed by a secondary synch pulse also generated as a function of the same primary clock.

3. (Rejected) The interface of claim 1, wherein at least one clock pulse of the first domain clock is a non-operate (NOP) clock pulse in each repeated systematic pattern when no data from the first domain is loaded into either said first latch or said second latch to cause equal average data transfer between the first domain and the second domain.

4. (Rejected) The interface of claim 3, wherein the NOP clock pulse is selected to minimize latency and prevent the slower clocked domain from being overrun by the faster clocked domain.

5. (Rejected) The interface of claim 1, wherein said first and second latches are selected by a select signal, said select signal being generated to select one of said first or second latches when the other of said first or second latches receives data.

6. (Rejected) An interface for synchronous data transfer between a first domain clocked at one frequency and a second domain clocked at a faster frequency, comprising:

a first latch for receiving data from the first domain when the first latch is selected;

a second latch for receiving data from the first domain when the second latch is selected;

and

a third latch selectively toggled to receive data from said first latch or said second latch in response to a negative edge of a clock pulse, other than a hold pulse, clocking the second domain and said third latch transferring data from said first latch or said second latch to the second domain when the second domain is clocked by a next clock pulse that is not a hold clock pulse;

wherein a first clock clocking the first domain and a second clock clocking the second domain are both derived from a single primary clock and generate clock pulses that repeat in a ratioed, systematic pattern framed by a secondary synch pulse also generated as a function of the same primary clock.

8. (Rejected) The interface of claim 6, wherein the hold clock pulse is selected to minimize latency.

9. (Rejected) The interface of claim 6, wherein said first and second latches are alternately selected by a select signal, said select signal being generated to select one of said first or second latches when the other of said first or second latches receives data.

10. (Rejected) An interface for synchronous data transfer between domains clocked at different frequencies, comprising:

a first latch for receiving data from a first domain clocked at one frequency when said first latch is selected;

a second latch for receiving data from the first domain when said second latch is selected;
and

a third latch for transferring data from either said first latch or said second latch to a second domain clocked at another frequency;

wherein the first domain is clocked at a slower frequency than the second domain and wherein said third latch is loaded when the second domain is clocked by a clock pulse that is not a non-operate pulse.

14. (Rejected) The interface of claim 10, wherein said third latch is alternately toggled to transfer data from said first or said second latch in response to a negative edge of a clock pulse clocking the second domain unless the clock pulse is a non-operate clock pulse.

15. (Rejected) A method for synchronous data transfer between clocked domains, comprising:

loading a first master latch with data from the first domain in response to a first domain clock pulse;

transferring the data loaded in the first master latch to the second domain through a slave latch in response to a second domain clock pulse;

toggling the slave latch to switch to receive data from a second master latch in response to a negative edge of the second domain clock pulse that is not a non-operate clock pulse;

loading the second master latch with data from the first domain in response to another first domain clock pulse;

transferring the data loaded in the second master latch to the second domain through the slave latch in response to another second domain clock pulse;

toggling the slave latch to switch to receive data from the first master latch in response to the negative edge of the clock pulse of the second domain clock that is not a non-operate clock pulse;

repeating a cycle of alternately loading the first and second master latches and transferring data to the second domain through the slave latch until a master clear signal is received by the slave and master latches; and

entering a non-operate state during each repeated cycle for at least one clock pulse of the faster domain clock;

wherein the clock pulses of the first domain and the second domain are both derived from a primary clock and repeat in a ratioed, systematic pattern framed by a secondary synch pulse.

16. (Rejected) The method of claim 15, further comprising: generating a signal in response to loading one of the first or second master latches to cause data to be loaded alternately into the first and second master latches.

18. (Rejected) The method of claim 15, wherein the non-operate state is selected to minimize latency in transferring the data between the domains.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.



APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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